Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D. C. 20554

In the Matter of

Amendment of Parts 2 and 97 of the Commission's Rules to Create a Low Frequency allocation for the Amateur Radio Service	)	ET Docket No. 02-98 RM-9404
Amendment of Parts 2 and 97 of the Commission's Rules Regarding an Allocation of a Band near 5 MHz for the Amateur Radio Service	)	RM-10209
Amendment of Parts 2 and 97 of the Commission's Rules Concerning the Use of the 2400-2402 MHz Band by the Amateur and Amateur-Satellite Services	)	RM-9949

To: The Commission

COMMENTS OF PUBLIC SERVICE ELECTRIC AND GAS COMPANY

Pursuant to 47 C.F.R. §§1.415 and 1.419, Public Service Electric and Gas Company ("PSE&G") hereby submits its Comments on the *Notice of Proposed Rulemaking* ("*NPRM*") in the above-captioned proceeding.[1]

[1] Amendment of Parts 2 and 97 of the Commission's Rules to Create a Low Frequency allocation for the Amateur Radio Service, *Notice of Proposed Rulemaking,* ET Docket No. 02-98, FCC 02-136; released May 15, 2002.

I. INTRODUCTION

PSE&G is a shareholder owned energy utility and New Jersey's largest supplier of electricity and natural gas. PSE&G's service territory of 2,600 square miles includes more than 300 of New Jersey's 566 municipalities and comprises 77% of the state's population.

PSE&G operates bulk power high voltage transmission lines ("transmission lines") at various voltages: 500 kV, 230 KV and 138 KV. Transmission lines carry electric power from generating stations to, from and between switching stations and substations. Transmission lines also interconnect regional transmission organizations. This network of transmission lines is commonly known as 'the electric grid', 'the power grid', or simply 'the grid'.

Unless a customer generates its own electric power, it necessarily obtains electric power from the electric utility franchised to serve its location. Thus, PSE&G supplies electric power to hundreds of federal, state, multi-state, county and municipal government facilities.

Federal government facilities include military bases, veterans hospitals, federal office buildings, federal agencies occupying leased office space, post offices, FAA control towers, the Statue of Liberty, and the electrically-powered infrastructure that supports them.

State government facilities include state agencies, state office buildings, the state university system, National Guard armories, bridges spanning navigable waterways, the New Jersey Turnpike, the Garden State Parkway, Interstate Highways 80, 78, 95, 195, 280, 295, 278,

287, more than two dozen state highways, and the electrically-powered infrastructure and systems that support them.

Multi-state agency facilities include: (a) The Port Authority of New York and New Jersey which operates Newark International Airport, the George Washington Bridge, the Goethals Bridge, the Outerbridge Crossing, the Bayonne Bridge, the Holland Tunnel, the Lincoln Tunnel and the PATH rail system; (b) The Delaware River Join Toll Bridge Commission which operates seven Delaware River bridges; (c) The Delaware River Port Authority of Pennsylvania and New Jersey which operates four Delaware River bridges and PATCO rapid transit systems, as well as the electrically powered infrastructure and systems that support them.

County/municipal government facilities include: county hospitals, traffic control signals, offices, county colleges, public schools, police departments, fire departments, first-aid/rescue squads, and the electrically-powered infrastructure and systems that support them.

PSE&G also supplies electric power to other critical infrastructure industries upon which the public depends: water utilities, wireline and wireless telecommunications service providers, railroads, operated by New Jersey Transit and AMTRAK, and the electrically-powered infrastructure and systems that support their operations.

Without electric power these facilities cease to function. If power fails, the effect upon public health, safety and welfare is immediate and can be widespread, depending upon the duration and extent of the outage.

The New Jersey State Board of Public Utilities requires electric utilities to provide safe and reliable electric service to their customers. Thus, PSE&G owes a duty to its customers in particular, and to the public in general, to maintain a safe, reliable and available electric power delivery system. PSE&G cannot meet that obligation unless its electric transmission system and transmission lines also are safe, reliable and available.

PSE&G relies extensively upon Power Line Carrier ("PLC") systems to ensure the safe and reliable operation of its transmission lines. PLC systems use the metallic conductors of the transmission line itself as the propagation medium. Because PLC signals will propagate along the metallic conductor(s) over rather long distances, PLC systems obviate the need for private microwave or other point-to-point wireline or wireless systems. PLC systems offer a low-cost and instantaneous means to 'trip' circuit breakers in order to prevent widespread outages when a fault occurs on a transmission line.

PLC systems have been used reliably for decades to protect transmission lines and their associated equipment at generating stations, switching stations and substations. Since the cost of system protection equipment is recoverable in electric rates, low-cost PLC systems help to keep electric rates affordable.

PLC systems use low power transmitters on frequencies between 10 kHz and 490 kHz in spectrum shared with federal government users. Non-government PLC systems operate on an unlicensed basis as restricted radiation devices pursuant to 47 C.F.R. §15.113. Government

systems operate under Chapter 7 of the NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management.

II. A Secondary Allocation for Amateur Operations in the 135.7 kHz - 137.8 kHz Band Would Threaten the Reliable Operation of Utility PLC Systems.

PSE&G opposes the Commission's proposal to allocate the 135.7 kHz -137.8 kHz band for amateur operations on a secondary basis.

First, the proposed allocation would increase the likelihood of interference to PLC systems from amateur operations in this band. Amateur operations are both unpredictable and uncoordinated. Even under the best of circumstances, interference from amateur operations would be difficult, if not impossible, to avoid or to locate. Further, if the FCC allocates the band to amateur operators even on a secondary basis, amateurs would not be required to avoid causing interference to PLC systems that currently are authorized to operate only on an unlicensed basis.[2]

Second, interference to an operating PLC system can cause a transmission line to 'trip' when it should not, or cause it not to 'trip' when it should. Regardless of which PLC system is used on a particular transmission line, the PLC receiver can suffer desensitization from a nearby amateur radio signal. The PLC receiver also can suffer signal blockage from an amateur radio signal that presents to the receiver a signal level greater than that of the associated PLC transmitter. If the amateur signal interferes with the 'guard' signal, the line will trip. If the

[2] *See* 47 C.F.R. § 15.113(b)

amateur signal interferes with reception of the frequency-shifted signal, the line will not trip under fault conditions.

An unplanned, unexpected trip of a transmission line may result in instability at the connected substations, switching stations and/or generating stations. If the affected transmission line terminates at a generating station, instability can result in the generating station tripping off line and disconnecting from the power grid. If this occurs during conditions of high demand, the sudden loss of the generation asset can result in instability in the entire grid of which it is a part. If a heavily loaded transmission line trips during a period of high demand, its loss to the power grid can result in widespread or cascading outages.

Third, as early as 1978 the Commission recognized that transmission line PLC systems, even though unlicensed, should be afforded protection:

> *We [the Commission] recognize that power line carrier systems exist without FCC authorization and are permitted to operate as long as they do not cause interference to radio users in the band. However,* ***we do acknowledge the critical uses of these systems in the overall energy program of the United States and believe that the public interest demands their needs be considered in the development of U.S. telecommunications policy***.[34] [emphasis added]

[3] *See* Eighth Notice of Inquiry in FCC No. 20271

[4] *See* 47 C.F.R. § 2.106, fn US294 (notifying users about the existence of PLC systems in the 9 kHz - 490 kHz band and urging them to minimize potential interference to the degree practicable.) *See also* Amendment of Parts, 2, 15, and 90 of the Commission's Rules to Provide Recognition for Power Line Carrier Operations of Electric Utilities in the bands 10 kHz - 490 kHz. Gen. Docket No. 82-9, *Report and Order*, 48 FR 5922 (1983).

What has changed since 1978 to make electric transmission lines less worthy of protection? If anything, the events of September 11, 2001 militate in favor of increased protection for all critical infrastructure systems, including transmission line PLC systems.

Fourth, in the *NPRM*, the Commission attempts to address the issue of potential interference by proposing technical rules to minimize the impact to PLC systems from amateur operations. The Commission has proposed: limiting EIRP to 1 Watt, limiting signal bandwidth to 100 Hz, and limiting output power to 100 Watts PEP. The Commission, however, has not proposed antenna size, polarity or design rules; it suggests that power limits alone will address adequately the potential for interference to PLC operations.

The proposed technical rules do not adequately address the potential for interference to utility PLC systems. It is the signal level at the PLC receiver that is critical, not the EIRP or output power of the amateur station. Power limits are meaningless if they are not coupled with antenna size, polarity, or design limits that protect PLC systems from harmful interference. Technical rules must ensure that amateurs do not operate in such proximity as to cause harmful interference to PLC systems. This is of extreme concern to PSE&G.

PSE&G serves 77% of our nation's most densely populated state. PSE&G's transmission lines are not, as the amateur radio community prefers to believe, located many miles from potential amateur radio stations. Most of PSE&G's transmission lines are adjacent to and abut residential and commercial property. Further, to minimize infrastructure redundancy, the State of New Jersey for many years has encouraged joint-use rights-of-way. Therefore, it is common

to find high voltage transmission lines constructed on rights-of-way occupied by pipelines, highways, or installed above or alongside railroad tracks. Railroad tracks, pipelines and highways are constructed through and adjacent to residential and commercial areas. In PSE&G territory, transmission lines are mere yards, not miles, from potential sources of interference.

Fifth, from the *NPRM*, the Commission seems to believe that there are few PLC systems operating between 135.7 kHz and 137.8 kHz.[5] PSE&G operates five high voltage transmission lines within this particular spectrum; however, many more would be affected. PLC receivers generally have a bandwidth of 4 kHz and, therefore, are sensitive to signals up to 2 kHz removed from the channel center. Thus, the systems potentially affected can be up to 2 kHz beyond the lowest and highest frequencies proposed. PLC systems operating on frequencies between 133.7 kHz and 139.9 kHz would be susceptible to interference.

If the *NPRM* were to be adopted as proposed, PSE&G would be forced either to retune its PLC systems, if it could, or to convert to an entirely different protective relaying system. In either case, the capital investment and recurring costs associated with replacement of PLC systems would be borne by the ratepayers – the public.

In the final analysis, the Commission must deal with one basic issue, namely, what is more important to the public interest? Does the desire of a hobby to experiment with low frequency communications outweigh the risk to America's electric power transmission

[5] *See NPRM* at Page 9, fn 58

networks? What articulable identifiable benefit does the public derive from the proposed allocation?

III. The Commission Should Not Provide Public Access to the PLC Licensed User ("LU") Database

The Commission suggests that potential interference in the 135.7 kHz -137.8 kHz PLC band (and the 160 kHz -190 kHz band PLC band) might be avoided if amateur operators knew the location of PLC systems. The Commission recognizes that UTC maintains a database of PLC locations to inform Federal Government users of incumbent and proposed PLC operations[6].

The Commission invited comment on whether amateur operators should have access to this database and whether it would provide sufficient information for them to avoid causing interference to PLC systems. PSE&G strongly believes that, neither amateur operators nor the public should be permitted access to the PLC LU database.

First, the LU database includes the geographic locations only of PLC transmitters and receivers. It does not provide any information concerning the routing of the associated transmission lines. PLC susceptibility is not restricted to receiver locations; susceptibility exists along the entire length of the metallic conductors. Without transmission line route maps, the LU database information is of little or no value.

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[6] *See NPRM* at page 11, paragraph 28. Until 1990, the North American Electric Reliability Council (NERC) was responsible for coordinating utility PLC systems with the NTIA. By agreement, the responsibility was transferred to the United Telecom Council ("UTC"). UTC now possesses and maintains the licensed user ("LU") database pursuant to 47 C.F.R. §90.35(g).

Second, if the information is made available to amateurs, then it basically is available to the public. Disclosure of such information is inconsistent with the articulated goals of United States homeland security efforts. Unless the benefit of disclosure outweighs the risk to national security, under no circumstances should PLC coordination data be made available to the public.

Third, the U.S. Department of Defense has classified the LU database as "confidential". Persons with access to the LU data, or persons who control those who have access to the LU data, must have at least "secret" clearance from the Defense Investigative Service.[7]

IV. CONCLUSION

Wherefore, the premises considered, PSE&G urges the Commission to continue to protect PLC systems and not to adopt a secondary allocation for amateur operations in the 135.7 kHz -137.8 kHz band.

Respectfully submitted,
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July 25, 2002

[7] DIS requires personnel to qualify for a clearance that is at least one level higher than the classification of the data. Since the LU data is "confidential", affected personnel are required to have "secret" clearance.